

**Related Pending Application**

Related Case Serial No: 10/059,392

Related Case Filing Date: 01-31-02

CLAIMS:

1. A thermoelectric module comprising:
 - a case;
 - a heat-radiation side insulating substrate;
 - a heat-absorption side insulating substrate;
 - a first soldering layer formed of a first soldering agent at a position to connect heat-radiation side insulating substrate and the case;
 - a plurality of P-type and N-type semiconductor chips interposed between the heat-radiation side insulating substrate and the heat-absorption side insulating substrate, the plurality of P-type and N-type semiconductor chips being arranged alternately to be connected in a series; and
 - a second soldering layer formed of a second soldering agent at a position to connect the heat-radiation side insulating substrate and one end of each of the plural P-type and N-type semiconductor chips, the second soldering layer also connecting the heat-absorption side insulating substrate and the other end of each of the plural P-type and N-type semiconductor chips, the second soldering agent being identical with the first soldering agent in raw material.
2. A method of producing a thermoelectric module comprising the steps of:
 - connecting a case and a heat-radiation side insulating substrate with a first soldering agent to form a first soldering layer between the case and the heat-radiation side insulating substrate; and
 - connecting the heat-radiation side insulating substrate and a heat-absorption side insulating substrate to and one end and the other end, respectively, of each of a plurality of P-type and N-type semiconductor chips, with a second soldering agent which is identical with the first soldering agent in raw material.
3. A thermoelectric module as set forth in Claim 1, wherein the first soldering agent and the second are selected from the group consisting of 95Sn5Sb, 91Sn9Zn, 96.5Sn3.5Ag, 97.5Sn2.5Ag, 100Sn, 65Sn25Ag10Sb, 99Sn1Sb, 90In10Ag, 97Sn3Sb, 95Sn5Ag, 93Sn7Sb, 80Au20Sn, 90Sn10Ag, and 97Sn3Cu.

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4. A method of producing a thermoelectric module as set forth in Claim 2, wherein the first soldering agent and the second are selected from the group consisting of 95Sn5Sb, 91Sn9Zn, 96.5Sn3.5Ag, 97.5Sn2.5Ag, 100Sn, 65Sn25Ag10Sb, 99Sn1Sb, 90In10Ag, 97Sn3Sb, 95Sn5Ag, 93Sn7Sb, 80Au20Sn, 90Sn10Ag, and 97Sn3Cu.

ABSTRACT OF THE DISCLOSURE

A thermoelectric module which includes a case 1, a heat-radiation side insulating substrate 4a, a heat-absorption side insulating substrate 4b, a first soldering layer 5a formed of a first soldering agent to connect the heat-radiation side insulating substrate 4a and the case 1, a plurality of P-type and N-type semiconductor chips interposed between the heat-radiation side insulating substrate 4a and the heat-absorption side insulating substrate 4b, the plurality of P-type and N-type semiconductor chips being arranged alternately, and a second soldering layer 15a (15b) formed of a second soldering agent to connect the heat-radiation side insulating substrate 4a and one end of each of the plural P-type and N-type semiconductor chips (the heat-absorption side insulating substrate 4b and the other end of each of the plural P-type and N-type semiconductor chips), the first soldering agent and the second soldering agent being identical in raw material.

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